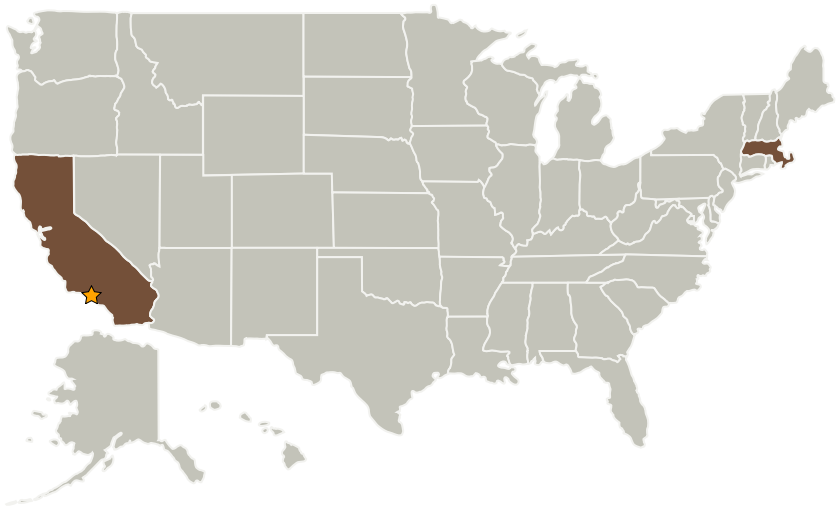
Constant-Energy Synchronous Probe for Surface Monitoring, Phase I

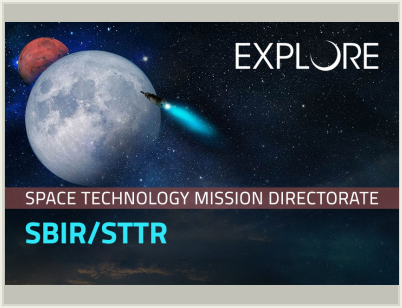
Completed Technology Project (2006 - 2006)

Project Introduction

During the next decade, NASA intends to send robotic exploration missions to Mars and other planets. Missions are planned to obtain samples from Mars and return them to earth for studies and to other planets to gather evidence for the existence of life. An important goal of NASA in these missions is to ensure that technologies are in place to safeguard against terrestrial microbial contaminations of the planets from robotic space vehicles and also to prevent nonterrestrial microbial or other foreign compound contaminations of the Earth from collected samples and returned space vehicles. Thus, each mission will require that space vehicles (landers and orbiters) be sterilized and sanitized for microbial and organic contaminations before launching to space and when returned to Earth. Sensitive detection techniques are thus needed to validate the effectiveness of the sterilization process. We propose to develop a handheld surface-monitoring instrument based on constant-energy synchronous fluorescence (CESF) spectroscopy. Like conventional fluorescence, CESF has excellent sensitivity but with the added feature of narrower spectral bandwidth resulting in improved selectivity. The instrument that will be developed in this program will have the unique capabilities of in situ quantification and identification of microbial and organic contaminations of surfaces.

Primary U.S. Work Locations and Key Partners





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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
EIC Laboratories, Inc.	Supporting Organization	Industry	Norwood, Massachusetts

Primary U.S. Work Locations	
California	Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
  - TX07.3 Mission Operations and Safety
    - TX07.3.5 Planetary Protection